

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A computer-implemented method for analyzing a virtual function, said method comprising:

~~locating determining whether~~ a virtual table exists for a virtual function, said virtual table comprising a start address for said virtual function; and

determining a call type for said a virtual function;

creating an instruction for said virtual function, said instruction comprising a control transfer function that directs execution to instrumentation code; and

rewriting said virtual table with a modified virtual table comprising an address for said instruction instead of said start address, wherein upon a call to said virtual function, said address for said instruction is loaded.

2. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 1 further comprising the step of:

performing instrumentation on said virtual function based upon said call type.

3. (Original) The computer-implemented method for analyzing a virtual function as recited in Claim 1 wherein said call type is selected from the group comprising direct, indirect, and virtual.

4. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 2 wherein the step of performing instrumentation on said virtual function based upon said call type comprises:

~~provided said virtual table is located, replacing an existing address~~

~~for said virtual function with a new address for said virtual function in said virtual table such that said new address points to instrumentation code;~~

~~upon a call to said virtual function, load said new address from said virtual table such that execution is directed to the instrumentation code;~~
~~and~~

~~continue execution and execute executing said instrumentation code such that control is delivered to said instrumentor.~~

5. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 4 further comprising:

performing a desired instrumentation task by said instrumentor; and

~~resume resuming execution by said instrumentor at said start existing~~ address previously contained in said virtual table.

6. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 4 further comprising:

overwriting said instrumentation code with instrumentation code which performs a desired instrumentation task; and

~~provide providing an instruction at the end of said instrumentation code wherein said instruction points back to said start existing~~ address previously contained in said virtual table.

7. (Original) The computer-implemented method for analyzing a virtual function as recited in Claim 1 further comprising:

determining from which location said virtual function has been called.

8. (Currently Amended) The computer-implemented method for analyzing a virtual function as recited in Claim 4 further comprising:

maintaining a mapping between said start existing address for said

virtual function and said ~~new~~ address for said instruction ~~virtual function~~.

9. (Currently Amended) A computer-readable medium embodying instructions that cause a computer to perform a method for analyzing a virtual function, said method comprising:

locating determining whether a virtual table exists for a virtual function, said virtual table comprising a start address for said virtual function; and

determining a call type for said a virtual function;

creating an instruction for said virtual function, said instruction comprising a control transfer function that directs execution to instrumentation code; and

rewriting said virtual table with a modified virtual table comprising an address for said instruction instead of said start address, wherein upon a call to said virtual function, said address for said instruction is loaded.

10. (Currently Amended) The computer-readable medium of Claim 9 further comprising instructions that cause said computer to perform said method further comprising the step of:

performing instrumentation on said virtual function based upon said call type.

11. (Original) The computer-readable medium of Claim 9 wherein said call type is selected from the group comprising direct, indirect, and virtual.

12. (Currently Amended) The computer-readable medium of Claim 10 further comprising instructions that cause said computer to perform said method further comprising the step of:

~~provided said virtual table is located, replacing an existing address for said virtual function with a new address for said virtual function in said virtual table such that said new address points to instrumentation code;~~

~~upon a call to said virtual function, load said new address from said virtual table such that execution is directed to the instrumentation code;~~
and

~~continue execution and execute~~ executing said instrumentation code such that control is delivered to said instrumentor.

13. (Currently Amended) The computer-readable medium of Claim 12 further comprising instructions that cause said computer to perform said method further comprising the steps of:

performing a desired instrumentation task by said instrumentor; and
~~resume~~ resuming execution by said instrumentor at said start
~~existing~~ address previously contained in said virtual table.

14. (Currently Amended) The computer-readable medium of Claim 12 further comprising instructions that cause said computer to perform said method further comprising the steps of:

overwriting said instrumentation code with instrumentation code which performs a desired instrumentation task; and

~~provide~~ providing an instruction at the end of said instrumentation code wherein said instruction points back to said start ~~existing~~ address previously contained in said virtual table.

15. (Currently Amended) The computer-readable medium of Claim 9 further comprising instructions that cause said computer to perform said method further comprising the steps of:

determining from which location said virtual function has been called.

16. (Currently Amended) The computer-readable medium of Claim 12 further comprising instructions that cause said computer to perform said method further comprising the steps of:

maintaining a mapping between said start existing address for said virtual function and said new address for said instruction virtual function.

17. (Currently Amended) An apparatus for analyzing a virtual function, said apparatus comprising:

means for locating determining whether a virtual table exists for a virtual function, said virtual table comprising a start address for said virtual function; and

means for determining a call type for said a virtual function;

means for creating an instruction for said virtual function, said instruction comprising a control transfer function that directs execution to instrumentation code; and

means for rewriting said virtual table with a modified virtual table comprising an address for said instruction instead of said start address, wherein upon a call to said virtual function, said address for said instruction is loaded.

18. (Original) The apparatus of Claim 17 for analyzing a virtual function, said apparatus further comprising:

means for performing instrumentation on said virtual function based upon said call type.

19. (Original) The apparatus of Claim 17 for analyzing a virtual function wherein said call type is selected from the group comprising direct, indirect, and virtual.

20. (Currently Amended) The apparatus of Claim 18 for analyzing a virtual function, said apparatus further comprising:

~~means for replacing an existing address for said virtual function with a new address for said virtual function in said virtual table such that said new address points to instrumentation code, provided said virtual table is located;~~

~~means for loading said new address from said virtual table such that execution is directed to the instrumentation code, upon a call to said virtual function; and~~

~~means for continuing execution and~~ executing said instrumentation code such that control is delivered to said instrumentor.

21. (Currently Amended) The apparatus of Claim 20 for analyzing a virtual function, said apparatus further comprising:

means for performing a desired instrumentation task by said instrumentor; and

means for resuming execution by said instrumentor at said start ~~existing~~ address previously contained in said virtual table.

22. (Currently Amended) The apparatus of Claim 20 for analyzing a virtual function, said apparatus further comprising:

means for overwriting said instrumentation code with instrumentation code which performs a desired instrumentation task; and

means for providing an instruction at the end of said instrumentation

code wherein said instruction points back to said start existing address previously contained in said virtual table.

23. (Original) The apparatus of Claim 17 for analyzing a virtual function, said apparatus further comprising:

means for determining from which location said virtual function has been called.

24. (Currently Amended) The apparatus of Claim 20 for analyzing a virtual function, said apparatus further comprising:

means for maintaining a mapping between said start existing address for said virtual function and said new address for said virtual function.